

MIKOS-101
Amendment dated 02/11/2005

09/778,967

07650001aa
Reply to office action mailed 08/11/2004

REMARKS

Claims 1-34 are currently pending in the application. By this amendment, claims 1-14, 18-20, 25-27, and 32-34 are amended for the Examiner's consideration. The foregoing separate sheets marked as "Listing of Claims" shows all the claims in the application, with an indication of the current status of each .

In the specification, the paragraphs beginning at page 2, line 9; page 2, line 21; page 3, line 15, and continuing to page 5, line 2; page 8, line 23; page 10, line 1; page 13, line 23; page 15, line 22, and continuing to page 15, line 30; page 20, line 29; page 21, line 15; page 22, line 7; and page 25, line 4 have been amended to correct typographical errors and clarify terminology. No new matter has been added.

The Examiner has objected to the drawings. The Examiner's indication in the body of the office action that the informal drawings submitted with the application are satisfactory for examination purposes, and that formal drawings will be required upon allowance, is acknowledged.

The Examiner's indication that claim 2 contains allowable subject matter is acknowledged with appreciation.

The Examiner has objected to the trademark/trade name terminology "FlashCorrelation" in claim 6 and "flashcorrelation" in claims 25-27 and 32-33. It will be observed that the terms "flash correlation" and "flash correlation artifact" are defined specifically in the specification at page 3, line 16, to page 4, line 11. It is this definition of the term – not the trademark – that is used to describe the invention. Consequently, the foregoing amendment to the specification clarifies this use of terminology by appropriately correcting references to "flash correlation" in the body of the specification and in the claims. It is believed that this amendment overcomes the ground for objection.

The Examiner objects to claim 20 as being broader than claim 1 from which it depends. It will be observed that the invention contemplates that the encryption and

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annotation features are optional, as described by the “Null encryption” and “Null annotation” terms at page 7, line 17, to page 8, line 4. Claims 1 and 20 have been amended to overcome this ground of objection by removing these optional features from claim 1 to claim 20.

The Examiner objects to the dependency format of claims 3-9, 12-14 and 18-20. These claims have been amended to overcome this objection.

The Examiner rejects claims 6, 11, 14, 25, 27, 32 and 34 under 35 U.S.C. §112, second paragraph, for lack of proper antecedent basis (claim 14) and use of a trademark (claims 6, 11, 25, 27, 32 and 34) for descriptive purposes. Claim 14 has been amended to provide a proper antecedent basis and, as indicated above, the specification and claims have been amended to overcome the grounds of rejection based upon use of a trademark for descriptive purposes.

The Examiner has rejected claims 1, 4-5, 8-9, 12-14, 18-21, and 28 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,799,082 to Murphy et al. (“Murphy”) in view of U.S. Patent No. 5,646,977 to Barton. Murphy describes an apparatus for capturing and authenticating a visual image by a) combining within a camera a digital image and a digital representation of location/time information taken from external sources such as GPS, where the combined image cannot be altered within the camera, and b) allowing only authorized persons to download the combined digital image. The methodology for embedding into the image the representation of location/time information is described in several embodiments. In a first embodiment the position information is automatically recorded separately and then bound together with the image, as in sub-frames of a frame (col. 10, lines 58-65). In a second embodiment the position information is recorded as an overlay on the image, viewable when the digital image is viewed, preferably located on a boundary so as not to interfere with visual details of the image (col. 11, lines 22-35). In a third embodiment the position information is embedded within an “authentication pattern” P of pixels which are a subset of the image (col. 11, line 36, to col. 13, line 29).

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The system described by Murphy relies for authentication on a) the integrity of the camera, b) a chain of custody for the camera and its stored digital image, and c) direct download from the camera by someone with a key to unlock the download mechanism (col. 15, lines 6-36). An image is authenticated by comparing the position information contained in the image with the position information alleged (col. 15, lines 36-46). It is to be emphasized that the comparison is based on the information itself (i.e. as alleged). There is no disclosure in Murphy of any methodology for making a comparison of the **encoded** position information. Instead, Murphy simply extracts the position information and uses the **extracted and recovered** position information (i.e. the position information itself, “in the clear”) in the comparison step. Furthermore, the possibility of the image being doctored is avoided in Murphy by a conventional chain of custody approach to the camera.

By contrast, the present invention does not presume a valid chain of custody for the camera and its images (which contain embedded position information). The evidentiary value of the present invention is precisely that it permits authentication of a digital image without reliance upon a chain of custody. This is accomplished by a comparison that ascertains whether the encoded position information is contained in the image, by a methodology which compares the encoded position information, in its digital array format, with the target image whose authenticity is being tested. It is important to note that the comparison is done against the form of the digital image overlaid with the encoded data array. Claims 21 and 28 already contain this element, and claim 1 has been amended to provide means for doing so.

Indeed, the methodology provides that each item that comprises position information (i.e. camera ID, frame number, GPS location, GMT date/time) can be used to generate a separate two dimensional pattern, the separate patterns then being combined to form the encoded data array (page 18, lines 27-29). This permits separate detection of the presence of each item in the target image (page 25, lines 8-11), which is highly advantageous when particular items of “position information”

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are not known and must be discovered by an exhaustive search (see page 17, lines 13-14; page 20, line 25, to page 21, line 2).

It should be noted that Murphy cannot correct for errors without the error-free original, and he can only do a single code; he can't update it or add additional information as it progresses through a chain of custody. His code remains constant regardless of what persons or equipment handle it. In particular, he provides no method for tracking whether someone decodes and copies an image, then restores it to the encoded form and sends it along. That is satisfactory if Murphy only wants to provide authentication and is not concerned with security of the data. However, the methodology of the present invention accomplishes both.

The Barton prior art describes how arbitrary digital information can be embedded within a stream of digital data in such a way that a user can determine whether the digital data have been modified. In contrast to Murphy, Barton does address the same problem addressed by the present invention, namely, the possibility that digital data will be altered during transmission. Barton's methodology provides a way of testing whether the digital data that arrives after transmission is an authentic copy of the original. Where Murphy relies upon chain of custody of the camera to obviate the concern about tampering during transmission, Barton provides a mechanism that can determine whether tampering has occurred.

However, Barton relies upon arbitrary data to perform the authentication function. There is no "position data" as conceived of either in Murphy or the present invention. The Examiner acknowledges that Murphy fails to teach a sensor ID. The Examiner then relies upon Barton for this omission. However, the reliance is misplaced. The sensor ID teaching in the present invention is the identification of the camera (or imaging device). The Examiner's intended citation from Barton (col. 6, lines 51-60) makes reference to a "creator of the block or the licensing agent" or "the creator of the image and the final licensee" (col. 8, lines 64-66). It is clear from the cited passages that Barton is referring to "creator" in the copyright sense, as is

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evident from the parallel reference to “the licensing agent” or “the final licensee.” There is no indication that Barton is concerned with the “position information” questions of Murphy or the present invention, that is, when and where the image was created. Thus, in Barton, there is no connection between “position information” and an evidentiary device that created an image of something present at a particular time and place.

The Examiner also acknowledges that Murphy fails to teach restoring the original array, and determining changes between the restored array and the original array. Barton does indeed teach a methodology for including within the embedded data sufficient information to restore the original information displaced by the embedded data. However, Barton and Murphy are unlikely bedfellows for one skilled in the art associated with the present invention. Murphy avoids the tampering issue through chain of custody, and Barton lacks a connection to the “position information” that is, in the present invention and in Murphy, to be authenticated. It is precisely the association between the image and this position information that is important for Murphy and the present invention. There is no concern at all in the present invention or in Murphy about “creators” at the level of meta-data, much less any advantage in ensuring that such “creators” are known and verifiable. No one skilled in the art would confuse the imaging device (identified by a sensor ID) with a creative artist who might use such an imaging device. The claims have been amended to clarify the foregoing points.

The Examiner has rejected claims 6, 10-11, 25-27, and 32-34 under 35 U.S.C. §103(a) as being unpatentable over Murphy and Barton as applied to claims 1, 21 and 28, and further in view of U.S. Patent No. 5,583,950 to Prokoski. However, as has been argued above, Murphy fails to describe or suggest a methodology for comparing the **encoded** position information. Nor does Barton supply what Murphy omits. Thus there is no basis in the combination of Murphy and Barton for using the flash correlation technique described by Prokoski – who is the present inventor.

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The Examiner has rejected claim 3 under 35 U.S.C. §103(a) as being unpatentable over Murphy and Barton as applied to claim 1, and further in view of U.S. Patent No. 5,862,217 to Steinberg. The Examiner has rejected claim 7 under 35 U.S.C. §103(a) as being unpatentable over Murphy and Barton as applied to claim 1, and further in view of U.S. Patent No. 5,841,886 to Rhoads. The Examiner has rejected claims 15-17 under 35 U.S.C. §103(a) as being unpatentable over Murphy and Barton as applied to claim 1, and further in view of U.S. Patent No. 6,526,158 to Goldberg. Since these rejected claims depend from claims now believed to be in allowable form, it is believed that these further rejections are also overcome.

In addition, please note the following. With reference to claim 8, the “block sequence number” of Barton (col. 6, lines 51-60) is not connected to the imaging device but rather to a “creator” in the copyright sense, as described above. Therefore, there is nothing in Barton suggesting the serial number and odometer setting of the image acquisition device. With reference to claim 9, the cited passage from Barton fails to suggest evaluation of subsections to localize areas of difference, as claimed. Barton merely corrects “any errors that may have occurred.” None of the referenced prior art can localize areas of alteration without decrypting their imagery and doing pixel by pixel serial processing, which is neither described nor suggested in the references. With reference to claim 14, the invention teaches triggering of the imaging device (page 10, lines 1-8; page 11, line 5; page 12, line 10; page 14, line 14; page 16, lines 5-6; page 18, lines 2-3), whereas the cited passage from Murphy (col. 15, lines 20-47) refers to downloading the image rather than capturing the image. It is appreciated that one of the examples given in the specification for “triggering” the image capture is an operation on a document (see page 10, lines 7-8), of which “downloading” may be analogous. However, what is triggered by the operation of “another device” is image capture, which is not taught by Murphy. Claim 14 has been amended to clarify this distinction. The same argument applies to the rejection of claims 15-17; further, Goldberg teaches removal from an image, not image

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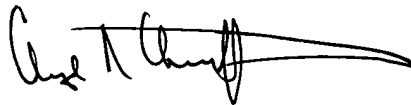
capture. With reference to claims 26-27, the cited passage from Murphy describes a sequence of images where each image in the sequence has authentication information, but the authenticity of each image must still be determined separately. In the present invention, as discussed above, the sequence is authenticated as a unit, that is, the sequence itself is authenticated by a single processing step, not the separate processing steps disclosed in Murphy.

In view of the foregoing, it is requested that the application be reconsidered, that claims 1-34 be allowed, and that the application be passed to issue.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at 703-787-9400 (fax: 703-787-7557; email: clyde@wcc-ip.com) to discuss any other changes deemed necessary in a telephonic or personal interview.

If an extension of time is required for this response to be considered as being timely filed, a conditional petition is hereby made for such extension of time. Please charge any deficiencies in fees and credit any overpayment of fees to Attorney's Deposit Account No. 50-2041.

Respectfully submitted,



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